In the claims:

Please amend the claims as reflected in the following listing:

1. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is ~~being~~ measured utilizing an acoustic wave device, the acoustic wave device having an input and an output transducers, and having a characteristic relationship between input power, output power, and an acoustic wave amplitude at a selected region between the input and output transducer, the acoustic wave device being coupled to the measured fluid, the method comprising the steps of:

   applying a predetermined power P_{in} of a harmonic signal having a frequency ω to the input transducer, to impart an acoustic wave at the selected region;

   measuring output power level P_{out} at the output transducer;

   using the characteristic relationship, and the input and output power levels, calculating the amplitude of the average acoustic wave imparted to the fluid;

   measuring viscosity of the fluid to obtain a measured viscosity at the selected region; and~~,~~

   calculating the shear rate of the fluid at the selected region by using the frequency, the viscosity measurement, and the acoustic wave amplitude.

2. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 1, wherein the step of measuring viscosity is performed utilizing the acoustic wave device.

3. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 2, wherein the step of measuring viscosity is carried out by calculating power insertion loss between the input and output transducers.

4. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 2, wherein the step of measuring viscosity is carried out by measuring phase shift of the imparted signal.

5. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 2, wherein the step of measuring viscosity is carried out by measuring the frequency change required for maintaining a constant phase shift of the imparted signal.

6. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in ~~of~~ claim 1, wherein the step of calculating the shear rate is carried out by

   utilizing the formula for penetration depth of the acoustic wave into the fluid, $\delta = \sqrt{2\eta/\omega\rho}$, where ω is the radian frequency of the applied harmonic wave having frequency, F, and $\omega = 2\pi F$, ρ is the density of the sample ~~liquid~~fluid. and η is the intrinsic viscosity (Pascal-seconds);

   utilizing a design parameter 'C' of the acoustic wave device, to relate the wave displacement 'U', to the average power flow, P_{avg}, as $U = C\sqrt{P_{avg}}$;

   and utilizing the frequency of the imparted signal and the foregoing calculations of the penetration depth and the displacement of the crystal face U, to calculated the shear rate as $\dot{\gamma} = \omega U / \delta$.

7. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 1, wherein the step of calculating the

shear rate is carried out using a correlation between the amplitude and the geometric average of the power inserted at the input power and the power sensed at the output transducer.

8. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 1, wherein the selected region contains therewith the geometrical midpoint between the input transducer and output transducer respective geometries.

9. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 1, wherein the step of measuring viscosity is carried out utilizing the power insertion loss between the input and output transducers.

10. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 1, wherein the step of measuring viscosity is carried out utilizing phase shift between the signal applied to the input transducer and signal sensed by the output transducer.

11. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 1, wherein the step of measuring viscosity is carried out by measuring the frequency change required for maintaining a constant phase shift of the imparted signal.

12. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 1, further comprising measuring the fluid temperature.

13. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 1, further comprising measuring the density of the fluid.

14. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 1, wherein the step of measuring

viscosity is carried out by measuring the change in the impedance of a transducer.

15. (Currently amended) A method for measuring the shear rate at which the viscosity of a fluid is measured using an acoustic wave device having an input and an output transducers, and being coupled to the fluid for imparting a signal thereto, the method comprising the steps of:

imparting a signal of a selected input power level into the input transducer, and measuring an output power level of the harmonic signal from the output transducer;

measuring the viscosity of the fluid;

calculating the average penetration depth of the signal imparted to the ~~liquid~~fluid using the input power level, the output power level, the separately-known density, and characteristic of the acoustic wave device construction, to derive the average amplitude of the wave imparted to the ~~liquid~~fluid; and~~,~~

calculating the shear rate of the viscosity measurement using the measured viscosity of the ~~liquid~~fluid, and the calculated penetration depth.

16. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the step of measuring viscosity is carried out by measuring the change in the impedance of a transducer.

17. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the step of measuring viscosity is performed utilizing the acoustic wave device.

18. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 17, wherein the step of measuring viscosity is carried out by measuring power insertion loss between the input and output transducers.

19. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the step of measuring viscosity is carried out by measuring phase shift of the imparted signal.

20. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the step of measuring viscosity is carried out by measuring the frequency change required for maintaining a constant phase shift of the imparted signal.

21. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the step of calculating the shear rate is carried out by

computing penetration depth of the acoustic wave into the fluid,

$\delta = \sqrt{2\eta / \omega\rho}$, where ω is the radian frequency of the applied harmonic wave having frequency, F, and $\omega=2\pi F$, ρ is the density of the sample ~~liquid~~fluid, and η is the intrinsic viscosity (Pascal-seconds);

utilizing a design parameter 'C' of the acoustic wave device, to relate a crystal wave displacement 'U', to the average power flow, P_{avg}, as $U = C\sqrt{P_{avg}}$; and,

utilizing the frequency of the imparted signal and the foregoing calculations of the penetration depth and the displacement of the crystal face U, to calculated the shear rate as $\dot{\gamma} = \omega U / \delta$.

22. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the step of calculating the

shear rate is carried out to produce a correlation between the amplitude and the geometric average of the power inserted at the input power and the power sensed at the output transducer.

23. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the selected region contains therewith the geometrical midpoint between the input transducer and output transducer respective geometries.

24. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the step of measuring viscosity is carried out utilizing the insertion power loss between the input and output transducers.

25. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the step of measuring viscosity is carried out utilizing phase shift between the signal applied to the ~~power~~ input transducer and signal sensed by the output transducer.

26. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the step of measuring viscosity is carried out by measuring the frequency change required for maintaining a constant phase shift of the imparted signal.

27. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, further comprising measuring the fluid temperature.

28. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, further comprising measuring the density of the fluid.

29. (Currently amended) A method for measuring shear rate at which the viscosity of a fluid is measured as claimed in claim 15, wherein the step of measuring the

viscosity and the step of calculating the average penetration depth use the same set of input and output power levels.

30-43 (Withdrawn)

44. (Currently amended) A method for characterizing viscoelastic properties of a fluid by utilizing an acoustic wave device coupled to the fluid, the device having an input and output transducers, the method comprising the steps of:

   i. selecting a set of input power levels in accordance within a range of input power levels appropriate to the acoustic wave device; and

   ii. for each of the selected input power levels

      a. applying the selected input power level to the input transducer;

      b. measuring an output signal from the output transducer;

      c. calculating the viscosity of the fluid utilizing the applied input power level and the measured output signal;

      d. calculating the shear rate at which the viscosity measurement occurred, utilizing the applied input power level and the measured output signal.

45. (Original) A method for characterizing viscoelastic properties of a fluid as claimed in claim 44, wherein the step of measuring viscosity is carried out by measuring the change in the impedance of a transducer.

46. (Original) A method for characterizing viscoelastic properties of a fluid as claimed in claim 44, wherein the input power levels represent a continuum.

47. (Currently amended) A method for characterizing viscoelastic properties of a fluid as claimed in claim 44, wherein the step of calculating the shear rate is carried out by

utilizing the formula for penetration depth of the acoustic wave into the fluid, $\delta = \sqrt{2\eta / \omega\rho}$, where ω is the radian frequency of the applied harmonic wave having frequency, F, and ω=2πF, ρ is the density of the sample ~~liquid~~fluid, and η is the intrinsic viscosity (Pascal-seconds);

utilizing a design parameter 'C' of the acoustic wave device, to relate the wave displacement 'U', to the average power flow, P_{avg}, as $U = C\sqrt{P_{avg}}$;

and utilizing the frequency of the imparted signal, and the foregoing calculations of the penetration depth and the displacement of the crystal face U, to calculated the shear rate as $\dot{\gamma} = \omega U/\delta$.

~~48-60 (Withdrawn)~~